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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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### Complete if Known

Application Number	10/669,141
Filing Date	09/23/2003
First Named Inventor	Milan R. Kokta
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-B14282

Sheet 1 of 13

### U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
SSS	A1	US- 3,753,775	08/21/1973	Robinson et al.	
SSS	B1	US- 3,964,942	06/22/1976	Berkenblit et al.	
SSS	C1	US- 4,649,070	03/10/1987	Kondo et al.	
SSS	D1	US- 4,657,754	04/14/1987	Bauer et al.	
SSS	E1	US- 5,643,044	07/01/1997	Lund	
SSS	F1	US- 5,742,026	04/21/1998	Dickinson, Jr. et al.	
SSS	G1	US- 5,989,301	11/23/1999	Laconto, Sr. et al.	
SSS	H1	US- 6,048,577	04/11/2000	Garg	
SSS	I1	US- 6,238,450 B1	05/29/2001	Garg et al.	
SSS	J1	US- 6,258,137 B1	07/10/2001	Garg et al.	
SSS	K1	US- 6,265,089 B1	07/24/2001	Fatemi et al.	
SSS	L1	US- 6,364,920 B1	04/02/2002	Garg et al.	
SSS	M1	US- 6,391,072 B1	05/21/2002	Garg	
SSS	N1	US- 6,406,769 B1	06/18/2002	Delabre	
SSS	O1	US- 6,418,921 B1	07/16/2002	Schmid et al.	
SSS	P1	US- 2001/0026950 A1	10/04/2001	Sunakawa et al.	
SSS	Q1	US- 2002/0028314 A1	03/07/2002	Tischler et al.	
SSS	R1	US- 2002/0030194 A1	03/14/2002	Camras et al.	
SSS	S1	US- 2003/0190770 A1	10/09/2003	Yeom et al.	

### FOREIGN PATENT DOCUMENTS

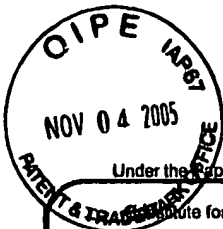
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
SSS	T1	CN 1291795	04/18/2001	Guanglei Sci & Tech Co. Ltd.	English Abstract Only	
SSS	U1	CN 1379484	11/13/2002	Univ Qinghua	English Abstract Only	
SSS	V1	CN 1469459	01/21/2004	Fudi Elect. Mat. Co. Ltd.	English Abstract Only	
SSS	W1	CN 1476046	02/18/2004	Shanghai Prec. Opt. Instr	English Abstract Only	
SSS	X1	CN 1476047	02/18/2004	Shanghai Prec. Opt. Instr	English Abstract Only	
SSS	Y1	EP 997445	05/03/2000	Corning Inc.	English Abstract Only	

Examiner Signature	<i>Stephen J. Stein</i>	Date Considered	1/7/2006
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SSS	A2	US- 2003/0213950 A1	11/20/2003	Hwang	
SSS	B2	US- 2004/0063236 A1	04/01/2004	Kwak et al.	
SSS	C2	US- 2004/0089220 A1	05/13/2004	Kokta et al.	
SSS	D2	US- 3,808,065	04/30/1974	Robinson et al.	
SSS	E2	US- 3,898,051	08/05/1975	Schmid	
SSS	F2	US- 4,347,210	08/31/1982	Maguire, et al.	
SSS	G2	US- 5,968,267	10/19/1999	Li	
SSS	H2	US- RE38,489 E	04/26/2004	Thony et al.	
SSS	I2	US- 6,846,434 B1	01/25/2005	Akselrod	
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	K2	US-			
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	O2	US-			
	P2	US-			
	Q2	US-			
	R2	US-			
	S2	US-			

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		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
SSS	T2	EP 1298709	04/02/2003	NGK Insulators Ltd.	English Abstract Only	
SSS	U2	EP 1394867	03/03/2004	Samsung Elect. Co. Ltd.	English Abstract Only	
SSS	V2	JP 53-043481	04/19/1978	Matsushita Elec Ind. Co. Ltd.	English Abstract Only	
SSS	W2	JP 79-026873	09/06/1979	Nippon Elect. Co.	English Abstract Only	
SSS	X2	JP 58-090736	05/30/1983	Tokyo Shibaura Elect. Co	English Abstract Only	
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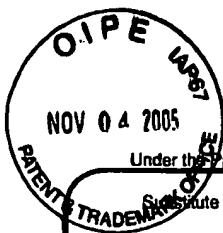
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1/7/2005

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Sheet 3

of 13

**Complete if Known**

Application Number	10/669,141
Filing Date	09/23/2003
First Named Inventor	Milan R. Kokta
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-BI4282

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	S3	US-			

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		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
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SSS	V3	JP 8-040797	02/13/1996	Kyocera Corp.	English Abstract Only	
SSS	W3	JP 8-083802	03/26/1996	Shingijutsu Kigyodan	English Abstract Only	
SSS	X3	JP 8-095233	04/12/1996	Tono Seiki YG	English Abstract Only	
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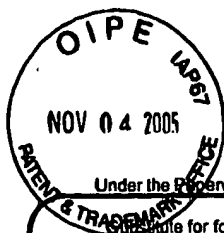
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SSS	V4	JP 11-235659	08/31/1999	Ricoh KK	English Abstract Only	
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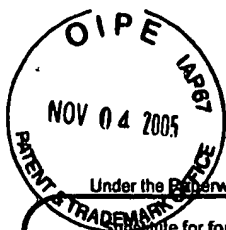
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	L5	US-			
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	N5	US-			
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SSS	V5	JP 2001-220295	08/14/2001	Namiki Seimitsu Hoseki KK	English Abstract Only	
SSS	W5	JP 2001-253800	09/18/2001	Namiki Seimitsu Hoseki KK	English Abstract Only	
SSS	X5	JP 2002-012856	01/15/2002	Neos KK	English Abstract Only	
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*Stephen J. Stein*

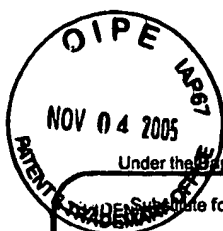
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SSS	T6	JP 2002-158377	05/31/2002	Matsushita Denki Sangyo KK	English Abstract Only	
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SSS	V6	JP 2002-353425	12/06/2002	Kyocera Corp.	English Abstract Only	
SSS	W6	JP 2003-045829	02/14/2003	Hitachi Chem Co. Ltd.	English Abstract Only	
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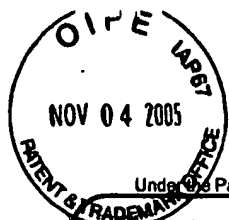
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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### Complete if Known

Application Number	10/669,141
Filing Date	09/23/2003
First Named Inventor	Milan R. Kokta
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-BI4282

Sheet 7 of 13

### U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
	A7	US-			
	B7	US-			
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	P7	US-			
	Q7	US-			
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		Country Code <sup>4</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
SSS	T7	JP 2003-165042	06/10/2003	Okamoto Kosaku Kikai Seisakusho KK	English Abstract Only	
SSS	U7	JP 2003-273022	09/26/2003	Namiki Seimitsu Hoseki KK	English Abstract Only	
SSS	V7	JP 2003-320521	11/11/2003	Tokyo Tungsten KK	English Abstract Only	
SSS	W7	JP 2003-334754	11/25/2003	Nippon Microcoating KK	English Abstract Only	
SSS	X7	JP 2003-338638	11/28/2003	Nichia Kagaku Kogyo KK	English Abstract Only	
SSS	Y7	JP 2004-006867	01/08/2004	Matsushita Denki Sagyo KK	English Abstract Only	

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Signature

*Stephen J. Stein*

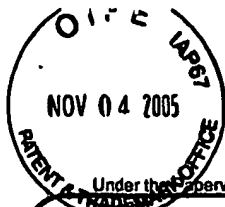
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Sheet 8

of 13

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Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-B14282

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	Q8	US-			
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	S8	US-			

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		Country Code <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)				
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SSS	U8	JP 2004-140394	05/13/2004	Nissan Chem Ind. Ltd.	English Abstract Only	
SSS	V8	KR 2002-043128	06/08/2002	Ulsan College	English Abstract Only	
SSS	W8	SU 1781271	12/15/1992	Krasy Poly (Kypo)	English Abstract Only	
SSS	X8	TW 550836	09/01/2003	Ind. Tech. Res. Inst.	English Abstract Only	
SSS	Y8	WO 2000/68332	11/16/2000	MPM Ltd.	English Abstract Only	

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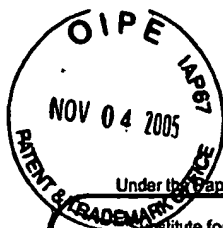
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 9 of 13

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Filing Date	09/23/2003
First Named Inventor	Milan R. Kokta
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-BI4282

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		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
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SSS	U9	WO 2004/33769	04/22/2004	Unisearch Ltd.	English Abstract Only	
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	W9				English Abstract Only	
	X9				English Abstract Only	
	Y9				English Abstract Only	

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Signature

*Stephen J. Stein*

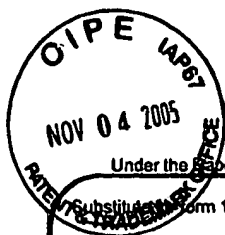
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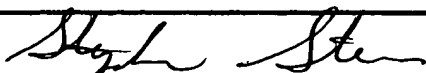
**Complete if Known****INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet	10	of	13	Application Number	10/669,141
				Filing Date	09/23/2003
				First Named Inventor	Milan R. Kokta
				Art Unit	1775
				Examiner Name	Stephen J. Stein
				Attorney Docket Number	1075-BI4282

**NON PATENT LITERATURE DOCUMENTS**

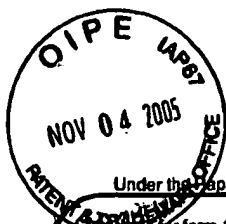
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
SSS	A10	Aeschlimann, R. et al., "The Chemical Polishing of Magnesium Aluminate Spinel in Pyrophosphoric Acid", MAT. RES. BULL., Vol. 5, pgs 167-172, 1970.	
SSS	B10	Dwikusuma, F., "Study on Sapphire Surface Preparation for III-Nitride Heteroepitaxial Growth by Chemical Treatments", JOURNAL FOR ELECTROCHEMICAL SOC., Nov. 2002, 30 pgs.	
SSS	C10	Kim, S. et al., "Stress Relaxation in Thick-Film GaN Grown by Hydride Vapor Phase Epitaxy on Sapphire and Spinel Substrates as Studied by Photoluminescence and Raman Spectroscopy", J. OF THE KR PHYS SOC., Vol. 34, No. 2, Feb. 1999, pgs 163-167.	
SSS	D10	Kurobe, Toshiji, et al., "Magnetic Field-Assisted Lapping", BULL. JAPAN SOC. OF PREC. ENGG., Vol. 20, No. 1, March 1986, pgs 49-51.	
SSS	E10	Libowitzky, E., "Optical Anisotropy in the Spinel Group: a Polishing Effect", EUR. J. MINERAL., Vol. 6, 1994, pgs. 187-194.	
SSS	F10	Reisman, A., et al., "The Chemical Polishing of Sapphire and MgAl Spinel", J. ELECTROCHEM. SOC.: SOLID STATE SCIENCE, Vol. 118, No. 10, October 1971, pgs 1653-1657.	
SSS	G10	Richter, F., et al., "Herstellung und Aurichtung Von MgAl-Spinell-Substraten fur die Halbleiterepitaxie", KRISTALL UND TECHNIK, Vol. 10, No. 3, 1975, pgs 33-348.	
SSS	H10	Robinson, P., et al., "The Chemical Polishing of Sapphire and Spinel", RCA REVIEW, Vol. 34, December 1973, pgs 616-629.	
SSS	I10	Roy, D., et al., "Spinel, Where did it go?", SPIE Vol. 3134, pgs 307-316.	
SSS	J10	Wang, C., et al., "Growth and Characterization of Spinel Single Crystal for Substrate Use in Integrated Electronics", J. APPLIED PHYSICS, Vol. 40, No. 9, August 1969, pgs 3433-3444.	

Examiner Signature		Date Considered	1/7/2006
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Sheet 11 of 13

### NON PATENT LITERATURE DOCUMENTS

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SSS	A11	Yanina, S., et al., "Moving Steps and Crystal Defects on Spinel Surfaces", MAT. RES. SOC. SYMP., Vol. 620, 2000, pgs M9.4.1-M9.4.6.	
SSS	B11	Byun, D., et al., "Reactive ion (N2+) Beam Pretreatment of Sapphire for GaN Growth", THIN SOLID FILMS, Vol. 326, 1998, pgs 151-153.	
SSS	C11	Byun, D., et al., "New Pretreatment Method of Sapphire for GaN Deposition", PHYS. STAT. SOL., Vol. 176, 1999, pgs 643-648.	
SSS	D11	Sung, Y., et al., "High Rate Etching of Sapphire Wafer Using Cl2BCl3Ar Inductively Coupled Plasmas", MAT. SCI. & ENG.: SOLID STATE MAT, Vol. B82, No. 1-3 2000, pgs 50-52. (ABSTRACT ONLY)	
SSS	E11	Wang, X., et al., "Chemical Polishing of Sapphire for Growth of GaN", CHINESE JOURNAL OF SEMICONDUCTORS, Vol. 18, No. 11, pgs 867-871, 1997. (ABSTRACT ONLY)	
SSS	F11	Lee, J., et al., "Scribing and Cutting a Blue LED Wafer Using a Q-Switched Nd:YAG Laser", APPLIED PHYSICS, Vol. 70, No. 5, pgs 561-564, 2000. (ABSTRACT ONLY)	
SSS	G11	Kalinski, Z., "Preparation of Sapphire Substrates for Gas Phase GaN Epitaxial Processes", KRISTAL UND TECHNIK, Vol. 12, No. 10, pgs 1105-1110, 1977. (ABSTRACT ONLY)	
SSS	H11	Jeong, C., et al., "Sapphire Etching with BCl3/HBr/Ar Plasma", SURFACE & COATINGS TECHNOLOGY, Vol. 171, No. 1-3, 2003, pgs 280-284. (ABSTRACT ONLY)	
SSS	I11	Kalinski, Z., et al., "Structural Etching of Al2O3 Substrate Plates Applied in Gaseous Epitaxy of GaN Layers", ELEKTRONIKA, Vol. 18, No. 3, 1977, pgs 117-119. (ABSTRACT ONLY)	
SSS	J11	Lakew, B., et al., "High Tc Superconducting Bolometer on Chemically Etched 7 Micrometer Thick Sapphire", NASA, 1997, 21 pgs. (ABSTRACT ONLY)	

Examiner  
Signature

*Stephen J. Stein*

Date  
Considered

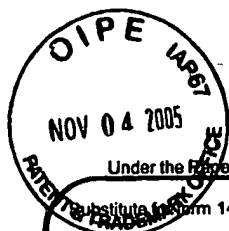
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SSS	A12	Jeong, C., et al., "Dry Etching of Sapphire Substrate for Device Separation in Chlorine-Based Inductively Coupled Plasmas", MAT. SCI. & ENG.: SOLID STATE MATERIALS, Vol. 93, No. 1-3, pgs 60-63, 2002. (ABSTRACT ONLY)	
SSS	B12	Gu, E., et al., "Micromachining and Dicing of Sapphire, Gallium Nitride and Micro LED Devices with UV Copper Vapour Laser", THIN SOLID FILMS, Vol. 453-454, pgs 462-466, 2000. (ABSTRACT ONLY)	
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SSS	D12	Fenner, D., et al., "Ion Beam Nanosmoothing of Sapphire and Silicon Carbide Surfaces", SPIE, Vol. 4468, pgs 17-24, 2001. (ABSTRACT ONLY)	
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SSS	I12	Cullen, G., "The Preparation and Properties of Chemically Vapor Deposited Silicon on Sapphire and Spinel", JOURNAL OF CRYSTAL GROWTH, Vol. 9, pgs 107-125, 1971. (ABSTRACT ONLY)	
SSS	J12	Liu, L., et al., "Substrates for Gallium Nitride Epitaxy", MAT. SCI. & ENG. REPORTS, Vol. R37, No. 3, pgs 61-127, 2000. (ABSTRACT ONLY)	

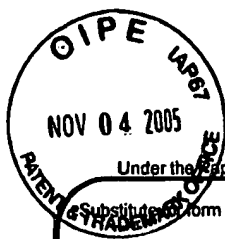
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**Complete if Known**

Application Number	10/669,141
Filing Date	09/23/2003
First Named Inventor	Milan R. Kokta
Art Unit	1775
Examiner Name	Stephen J. Stein
Attorney Docket Number	1075-BI4282

Sheet	13	of	13
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**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
SSS	A13	Khattak, C., et al., "Production of Sapphire Blanks and Substrates for Blue LEDs and LDs", MAT. RES. SOC. SYMP. - PROCEEDINGS, V. 743, pgs 219-224, 2002. (ABSTRACT ONLY)	
SSS	B13	Gutsche, H., et al., "Polishing of Sapphire with Colloidal Silica", JOURNAL OF THE ELECTROCHEMICAL SOCIETY, Vol. 125, No. 1, 1978, pgs 136-138, 1978. (ABSTRACT ONLY)	
SSS	C13	Duffy, M., et al., "Semiconductor Measurement Technology: Method to Determine the Quality of Sapphire, (NOTE) Final Report", RCA Labs, 1980, 77 pgs. (ABSTRACT ONLY)	
SSS	D13	Duffy, M., et al, "Method to Determine Quality of Sapphire, (NOTE) Interim Rept.", RCA Labs, 1975, 88 pgs. (ABSTRACT ONLY)	
SSS	E13	Horie, S., et al., "Precision Grinding of Semiconductor - Related Materials", (JOURNAL) NEW DIAMOND, Vol. 20, No. 2, pgs 8-13, 2004. (ABSTRACT ONLY)	
SSS	F13	Edgar, J., et al., "Substrates for Gallium Nitride Epitaxy", MAT. SCI. & ENG., PART R, Vol. R37, No. 3, pgs 61-127, 2002. (ABSTRACT ONLY)	
SSS	G13	Author Unknown, "Specifications for Polished Monocrystalline Sapphire Substrates" 1996, Affiliation (Issuing Organization) SEMI Semiconductor Equipment & Materials International, USA. (Bibliographic Entry Only).	
SSS	H13	Search Report for Technical Articles (Including various Abstracts of certain Identified References)	
	I13		
	J13		

Examiner Signature		Date Considered	1/7/2006
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